

6 MEDICAL ASSEMBLY WITH TRANSDUCER FOR LOCAL DELIVERY OF A
7 THERAPEUTIC SUBSTANCE AND METHOD OF USING SAME

8 Jeffrey A. Steward, Brandon S. Gosiengfiao

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10 **ABSTRACT**

11 A medical assembly is used to deliver a therapeutic substance to a treatment area. The
12 medical assembly comprises a catheter having a distal end and a proximal end, a transducer
13 supported by at least a portion of the distal end of the catheter assembly, and a delivery lumen
14 mounted on the catheter for delivery of a therapeutic substance. Support for the transducer is
15 provided at a preselected number of anchoring points, wherein an inner surface of the transducer
16 is positioned at a preselected distance from an outer surface of the catheter. The preselected
17 distance defines a gap that is occupied by a low density material such as a gas which reflects
18 acoustic pressure waves directed toward the gap by a transducer when a voltage is applied to the
19 transducer. The reflected pressure wave increases the energy in the system, enhancing transport
20 of therapeutic substances from the delivery lumen to the surrounding tissues and/or cells to be
21 treated. The medical assembly may optionally be used in conjunction with both macroporous
22 and microporous balloons. The medical assembly may optionally be modified so that a plurality
23 of transducers are used, wherein the distal end of a transducer is positioned at a preselected
24 distance from the proximal end of an adjacent transducer.

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